DOCUMENT RESUME

ED 235 662 EC 160 821

AUTHOR Carlson, Faith; Simpson, Mary Margaret, Ed.
TITLE Prattle and Play: Equipment Recipes for Nonspeech Communication.
INSTITUTION Nebraska Univ. Medical Center, Omaha. Meyer Children's Rehabilitation Inst.
PUB DATE 82
NOTE 53p.
AVAILABLE FROM Media Resource Center, Meyer Children's Rehabilitation Institute, University of Nebraska Medical Center, 444 S. 44th St., Omaha, NE 68131 ($5.00).
PUB TYPE Guides - Non-Classroom Use (055)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Communication Aids (for Disabled); *Communication Disorders; Equipment; *Nonverbal Communication; Play; Toys

ABSTRACT

The book describes techniques for helping nonspeaking individuals to communicate. The first section focuses on equipment, presenting information on materials and instructions for constructing such equipment as communication boards for children who need a looking response; boards or trays for children with motor control problems; brief-case-style boards for children with good pointing responses; acrylic and cloth symbol blocks, stuffed animals, and clothing to familiarize children with commonly used symbols; and boards that allow motorically handicapped children to play. The second section illustrates adaptations that allow communication devices to be individualized to meet children's specific needs. (CL)

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EQUIPMENT RECIPES FOR NONSPEECH COMMUNICATION

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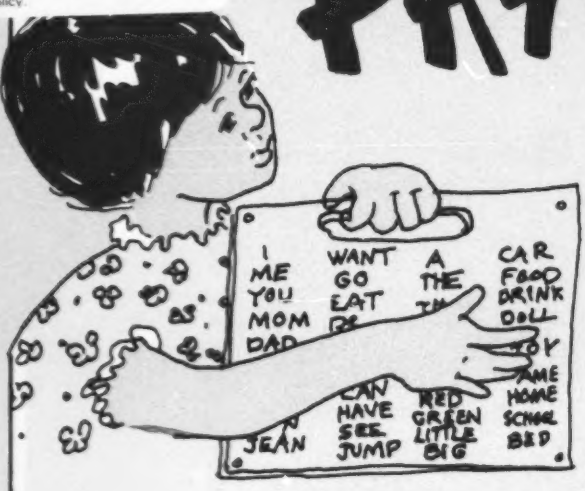
PRATTLE AND PLAY



by
Faith Carlson

Meyer Children's Rehabilitation Institute
University of Nebraska Medical Center

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Printed UNMC Print Shop
September 1982

PRATTLE AND PLAY: EQUIPMENT RECIPES FOR NONSPEECH COMMUNICATION

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ACKNOWLEDGEMENT

Many thanks to the children and parents of MCRI who played such a big role in developing the ideas in this book. A very special note of appreciation also goes to two former staff members who have contributed to the work — Nancy Harlan and Cindy James.

Faith Carlson

INTRODUCTION

The equipment in this book was designed for and used with children at Meyer Children's Rehabilitation Institute who were unable to speak. These children are only a few of over one million people in the United States who are nonspeakers. Some nonspeakers have problems such as cerebral palsy which may make it difficult for them to walk, feed themselves, and play. Others have problems which just affect the ability to speak. Some nonspeakers have difficulty communicating for only a short time while others are unable to speak throughout their lives.

Even though they cannot talk, nonspeakers have valuable thoughts and feelings to express. By using nonspeech therapy methods and devices, nonspeakers can develop ways to communicate. However, in order to develop an effective nonspeech communication, cooperation is necessary between the nonspeaker and many members of the community, such as parents, siblings, professionals, and craftsmen.

Some nonspeakers learn to communicate with their eyes, others with their hands, while many more use a combination of methods. The first step in developing any nonspeech system of communication is an evaluation by qualified professionals of the nonspeaker's skills and needs. These professionals may include a speech/language pathologist, physical therapist, occupational therapist, or several others.

This book is not meant to be a complete reference on how to develop communication for your child. It contains sample materials which can be incorporated into the child's communication program after the child has been evaluated and after the materials in this book have been determined to be appropriate. While teaching a child to use these materials, the child, parents, and professionals should continue working together so that appropriate and effective communication is developed.

Since this book focuses on materials for children, and since children learn to communicate through play, toys have been included in designs. The child can "talk" with his or her eyes or hands, make things happen, and grow with the wonderful skill of communication. It is hoped all who use this book will enjoy themselves and learn as they prattle *and* play.

How To Use This Book

This book is divided into two sections:

1. **Equipment:** The materials and instructions for making each piece of equipment are found in this section. At the end of each set of instructions you will find references to those pages in the adaptations section which are relevant to the design.
2. **Adaptations:** This section will tell you how to make special measurements and changes in design so that the equipment will better suit your child.

The materials used to construct the equipment described in this book are principally wood, cloth, and plastic. The plastic used in most recipes is acrylic, marketed under such trade names as *Plexiglas* or *Lexan*. If you have not had extensive experience working with the materials in this book, consult your local experts. Those who work in lumber yards, plastic shops, and hardware stores can help if you need to substitute materials or have any questions. They can often provide you with free brochures which will tell you how to work with specific materials and tools. In addition, the following books might be of some help.

DeWick, E. and Cooper, J. *Plastic craft*. New York: The MacMillan Company, 1946.

Endacott, G. W. *Woodworking and furniture making for the home.* New York: Drake Publishers, Inc., 1972.

Hayward, C. W. *The complete book of woodwork.* New York: Drake Publishers, Inc., 1972.

Newman, J. H. and Newman, L. S. *Plastics for the craftsman.* New York: Crown Publishing, Inc., 1972.

Reader's Digest Association. *Reader's Digest complete do-it-yourself manual.* New York: The Reader's Digest Association, 1973.

Time-Life, Inc. *Working with wood.* Alexandria, Virginia: Time-Life Books, 1979.

For More Information

For more information on nonspeech communication for someone you know who cannot speak, call your local rehabilitation agency, school system, or consult a speech/language pathologist who specializes in this area of communication. For more general information on the topic refer to the following list of publications.

Ad Hoc Committee on Communication Processes and Nonspeaking Persons. *Position statement on nonspeech communication.* Asha, 1981, **23** (8), 577-581.

Artificial Language Laboratory, Computer Science Department. *Communication outlook: A publication of the international action group for communication enhancement.* East Lansing, Michigan: Michigan State University, published quarterly.

Carlson, F. *Alternate Methods of Communication.* Danville, Illinois: Interstate Printers & Publishers, 1981.

Montgomery, J. *Non-oral communication, a training guide for the child without speech.* Fountain Valley, California: Fountain Valley School District, California State Department of Education, 1980.

Musselwhite, C. R. and St. Louis, K. W. *Communication programming for the severely handicapped.* San Diego, California: College-Hill Press, 1981.

Silverman, F. H. *Communication for the speechless.* Englewood Cliffs, New Jersey: Prentice-Hall, 1980.

Vanderheiden, G. C. and Grilley, K. (Eds.). *Non-vocal communication techniques for the severely physically handicapped.* Baltimore: University Park Press, 1975.

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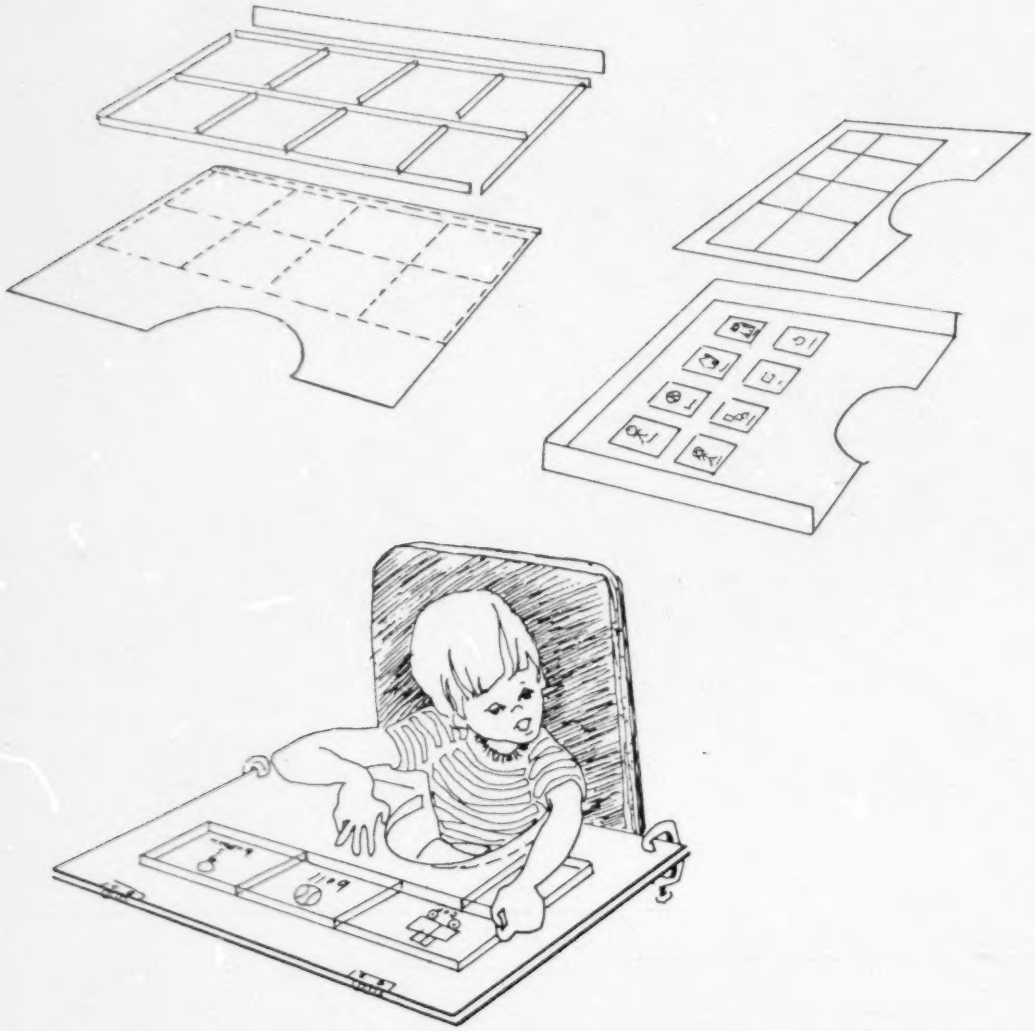
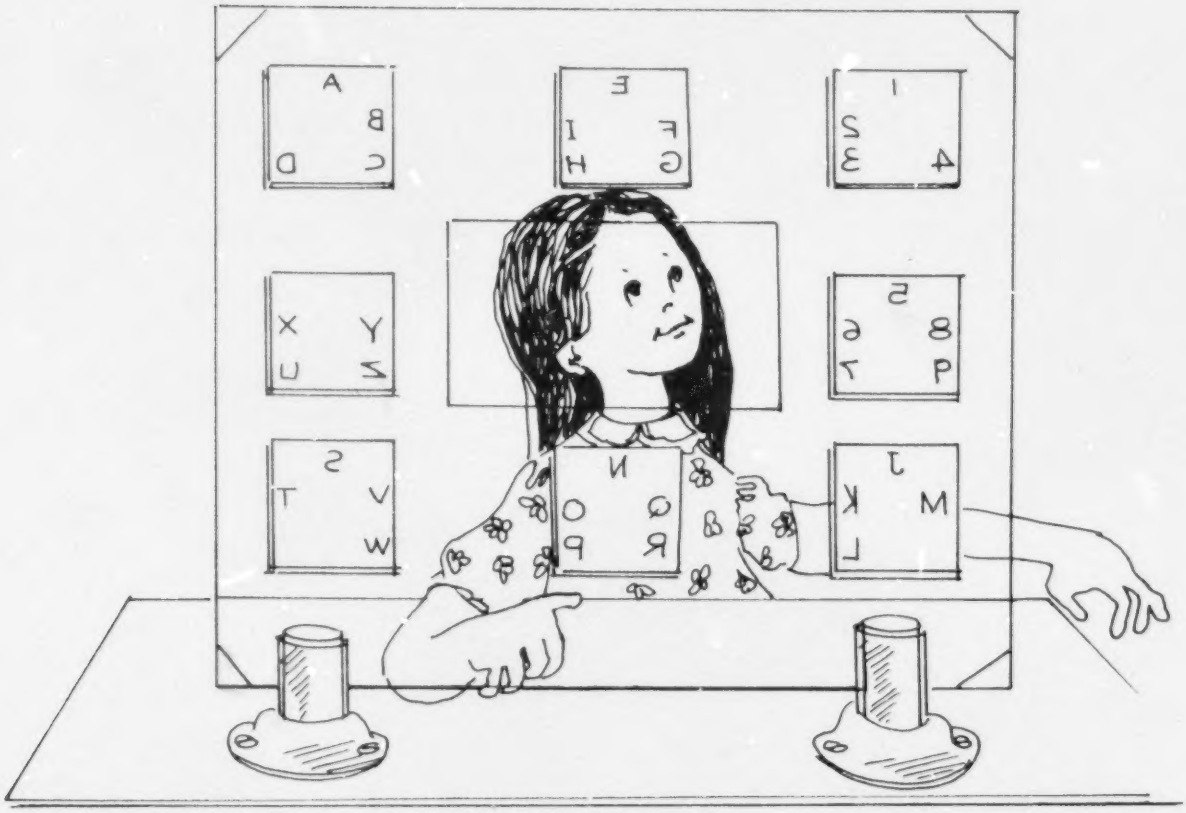
CREATING YOUR EQUIPMENT



Be sure to read the variations in the ADAPTATIONS section of this book before starting each project. These may make each item more suitable for your needs or save you time and money.

THE LOOKING BOARD (With 8 Pockets)



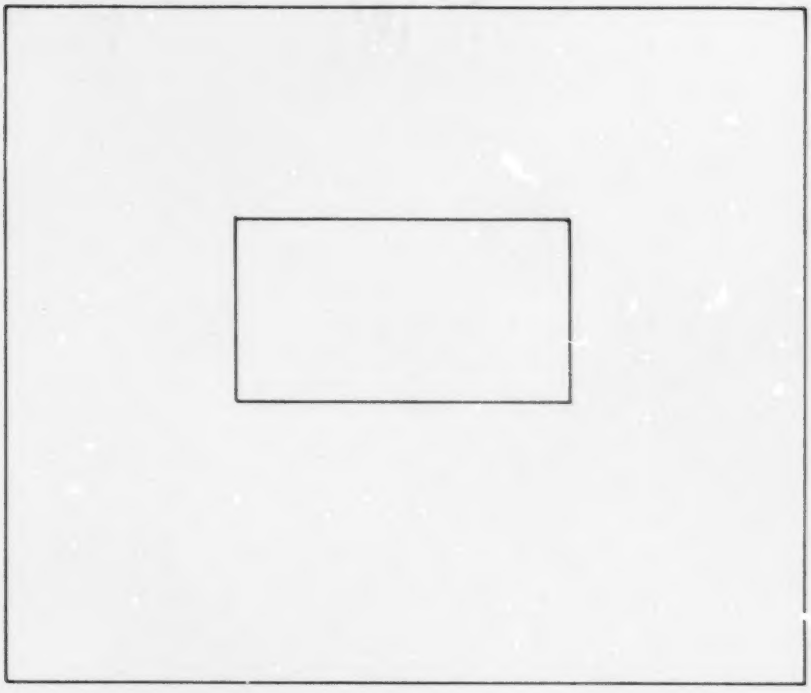
This board is intended for children who need a looking response. It can be used at a simple level using two or more pockets with a single symbol or picture in each, or as a coded board in the same way the 36 pocket board is used (see page 16). At the simple level the child looks at the pocket displaying the symbol or picture he or she wishes to communicate. The "listener" then points to that pocket and says, "You told me _____." Beginners should start with two pockets, build up to eight, and eventually reach the two-step coding system.

Materials

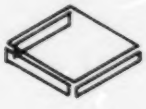
1 sheet of paper, 24" x 18" (newsprint will do)
1 sheet of acrylic, 24" x 18"
8 sheets of acrylic, 4" x 4" each
24 strips of acrylic, 3" x 1/8" each
(Note: the above should be clear, non-glare if possible)
4 triangles of colored acrylic (1 red, 1 gold, 1 blue, 1 green)
solvent for cementing acrylic sheets

Instructions

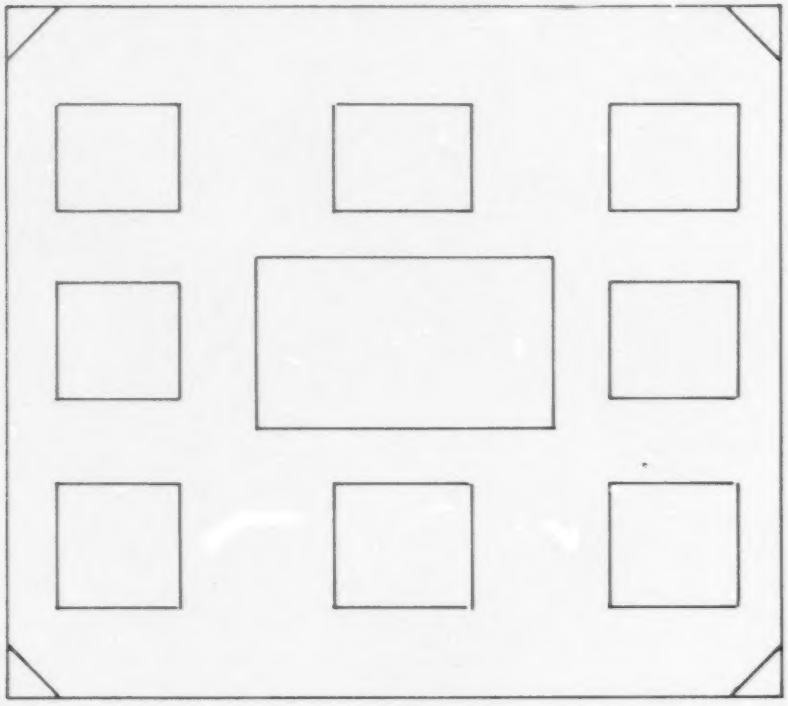
Cut an 8" x 6" hole in the center of the large acrylic sheet.



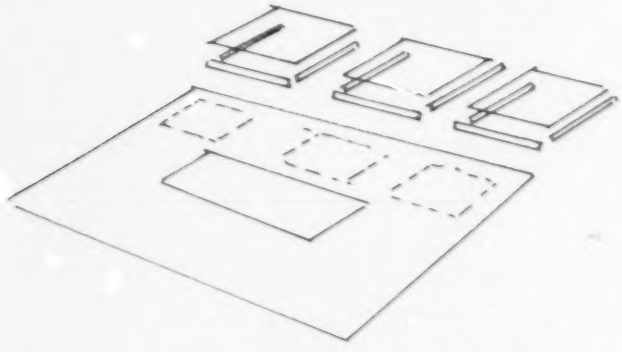
Cement three strips of acrylic on each of the 4" x 4" sheets, one at the bottom and one at each side.



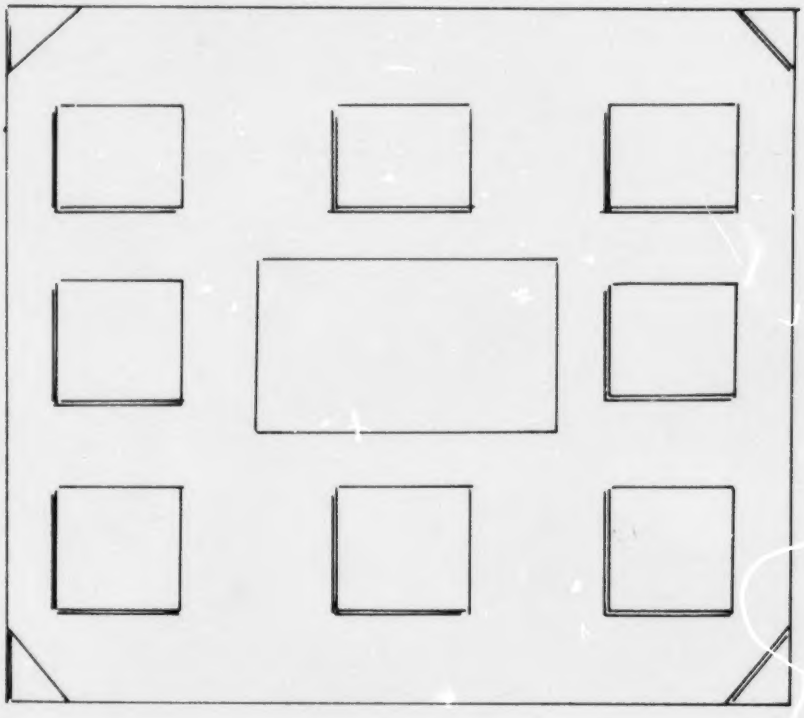
On the sheet of paper, draw eight 4" x 4" squares with the following spacing (this will be your map for attaching the plastic pockets):



Lay the large acrylic sheet with the hole on top of the paper. Cement each 4" x 4" sheet onto the large acrylic sheet by its three strips. Cement a colored triangle onto each corner of the large acrylic sheet.



Your finished product should resemble this:



See adaptations for this Looking Board on pages 50-57.

THE LOOKING BOARD (With 36 Pockets)

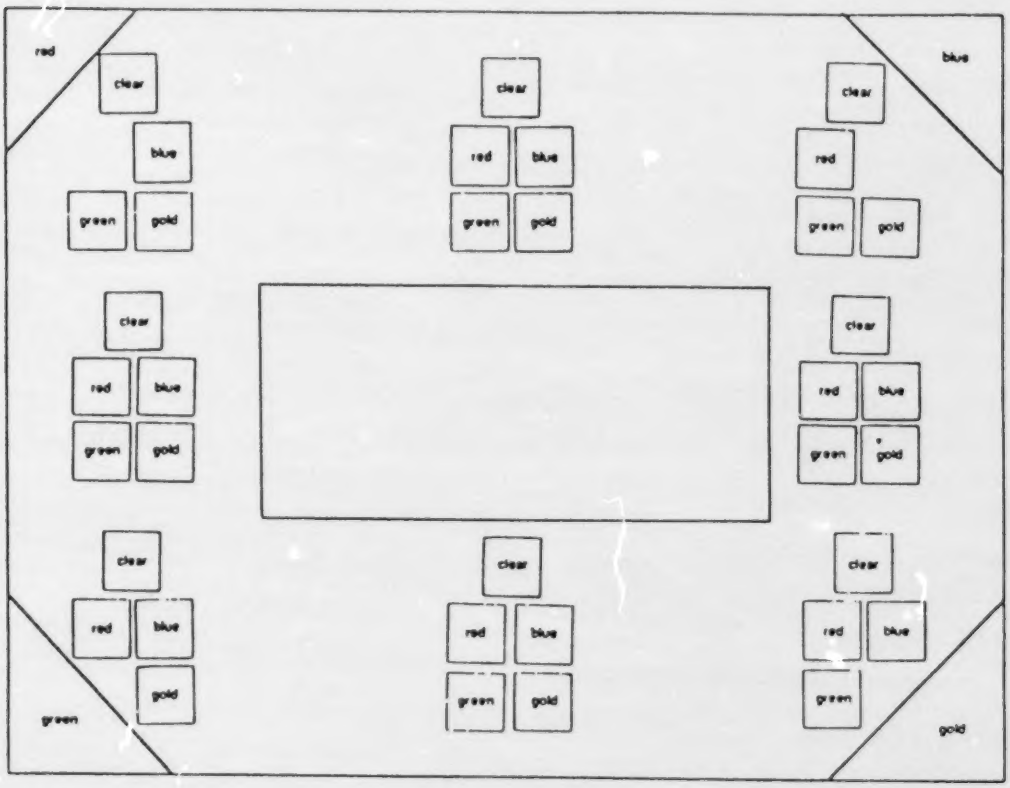
This board is intended for children who need to use a looking response and can understand a two-step coding system. The child first looks at the area where his or her response is displayed. The "listener" then asks the child what color the response is. The child looks through the central window if it is a clear colored response or to the appropriately color coded corner triangle for a blue, red, gold, or green colored response.

Materials

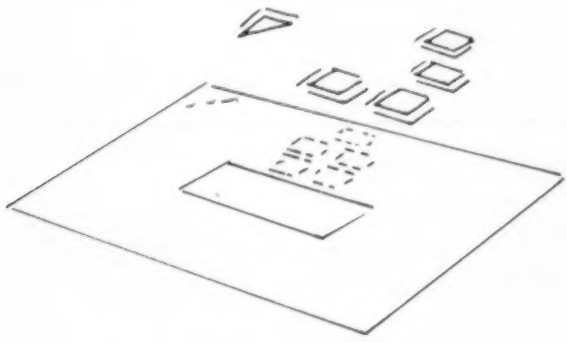
1 large sheet of paper
1 sheet of clear acrylic, 24" x 20"
8 pieces of clear acrylic, 1½" x 1½" each
7 pieces of blue acrylic, 1½" x 1½" each
7 pieces of gold acrylic, 1½" x 1½" each
7 pieces of green acrylic, 1½" x 1½" each
7 pieces of red acrylic, 1½" x 1½" each
4 triangles of acrylic (1 blue, 1 gold, 1 green, 1 red)
108 strips of clear acrylic, 1" x 1/8" each

Instructions

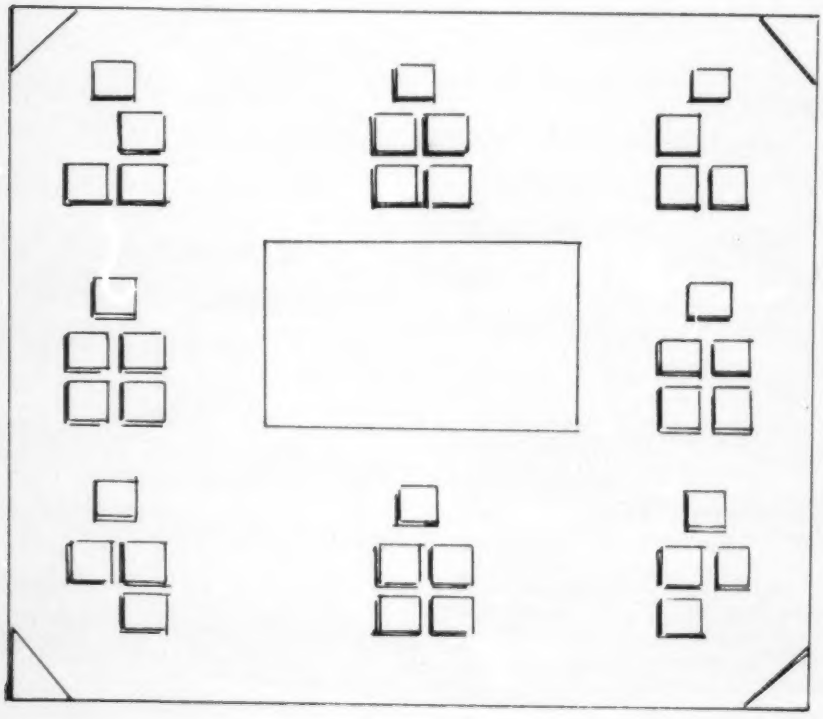
Cut a 12" x 7½" hole out of the center of the largest sheet of acrylic. Set it aside. On the large piece of paper draw the following map with the designated dimensions. Write the appropriate color in each square.



Cement three strips to each of the acrylic squares, one to each side and one to the bottom. Lay the large sheet of acrylic on the map. Cement the triangles to each corner according to the colors on the map. Then, cement the squares onto the large acrylic sheet by the three strips on each square. Be sure to match the color of each square to that written on the paper map.

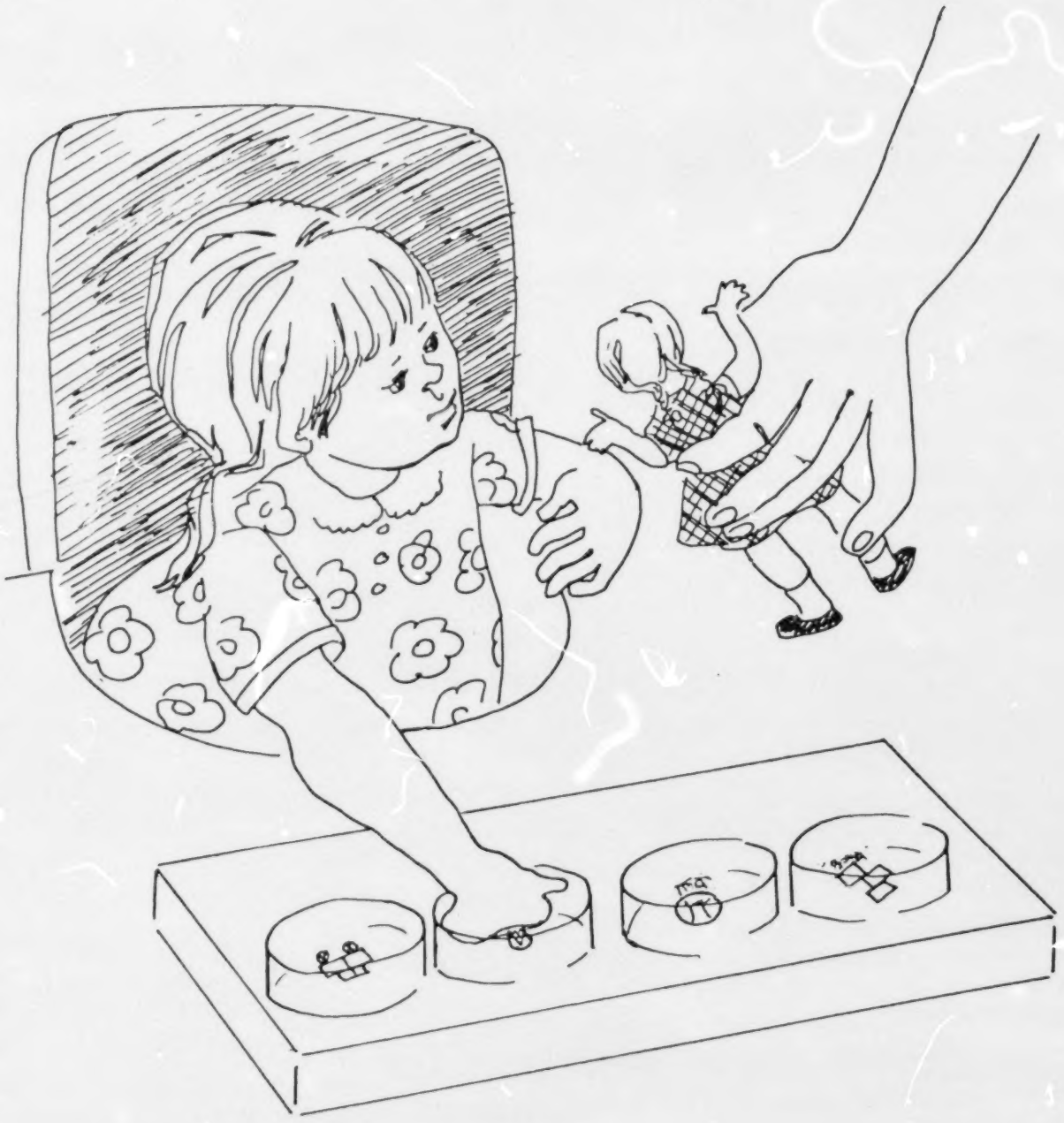


Your finished product should resemble this:



See adaptations for this Looking Board on pages 50-57.

BOARD WITH WELLS

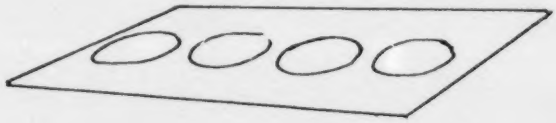


This device is designed for children who have motor control problems affecting their hands. Pictures or symbols are mounted under each well. Children who cannot hold their hands in one place to point can put a hand into a well long enough for the "listener" to tell which symbol or picture is being indicated. Children also like to use the wells to hold toys that would ordinarily scatter out of their reach.

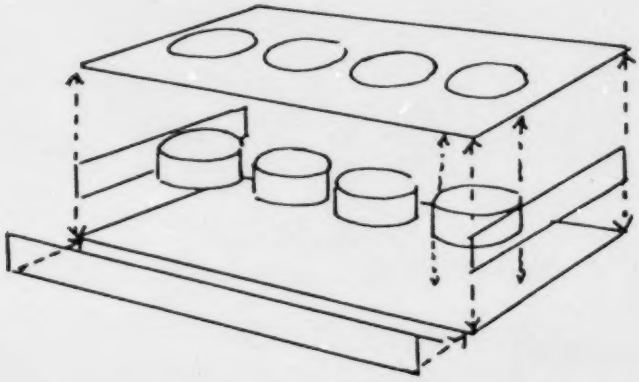
Materials
4 pieces of 3" acrylic tubing, 1½" deep
2 sheets of clear acrylic, 24" x 10"
2 sheets of acrylic, 9½" x 1¼" each (¼" thick)
2 sheets of acrylic, 24" x 1½" each (¼" thick)
solvent for cementing acrylic

Instructions

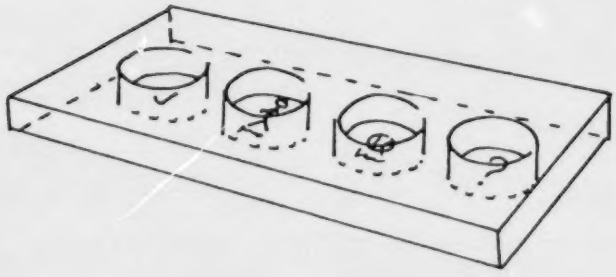
You will be building this device with it turned upside down (in other words, from the bottom up). Measure the inside diameter of the tubing. Cut four circular holes the diameter of the inside of the tubing in one of the 24" x 10" acrylic sheets.



Cement a tube to each of the holes you have cut. Cement the 9½" x 1½" sheets to each side, and the 24" x 1½" sheets to the bottom and top of this acrylic sheet. Cement this entire piece to the remaining 24" x 10" sheet. Be sure to apply solvent to the edges of each tube as well as to the bottoms and sides.

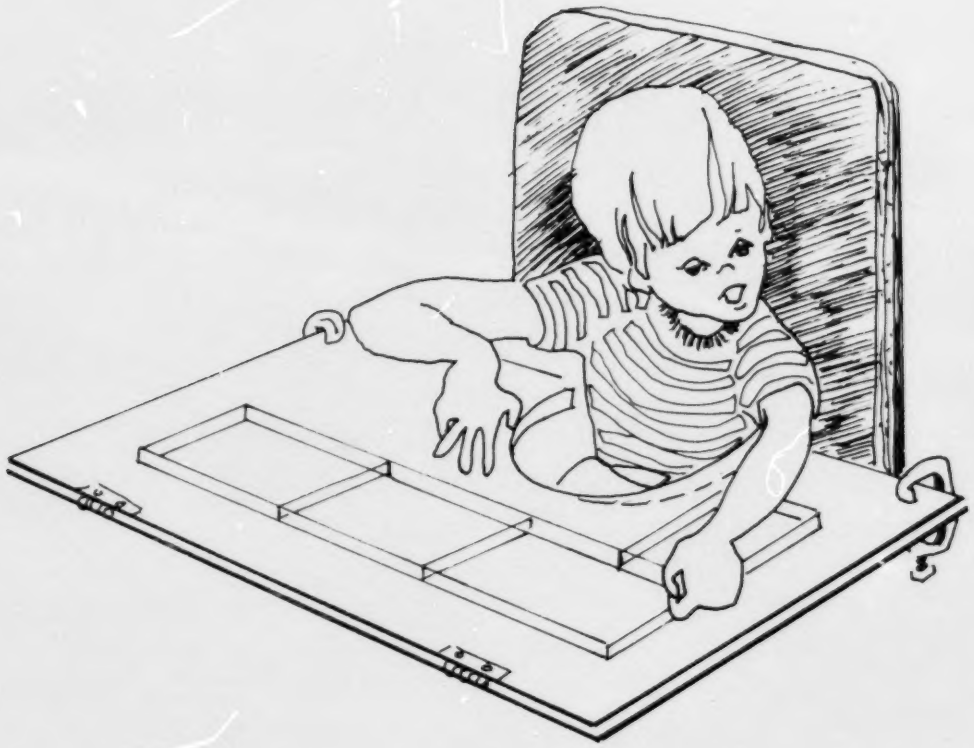


Turn over. Your finished product should resemble this:



See adaptations for this board on pages 58-63.

DIVIDED ACRYLIC TRAY



This tray is intended for children who have moderate trouble holding their hands in one spot long enough to point. The ridges will help contain a finger or the hand in one spot long enough for the "listener" to read the message below the indicated square.

Materials

Inside Tray:

1 large sheet of paper
1 22 7/8" x 22 7/8" (¼" thick) acrylic sheet
3 16" x 3/8" acrylic strips
2 8¼" x 3/8" acrylic strips
6 3¾" x 3/8" acrylic strips
1 16½" x ¾" acrylic strip
solvent for cementing acrylic

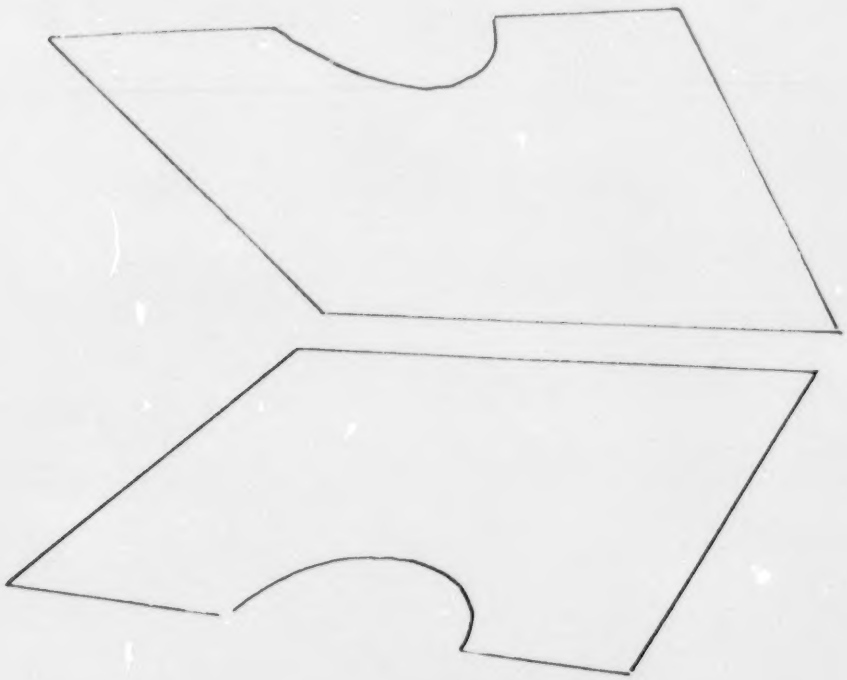
Frame:

1 23" x 23" (½" thick) acrylic or plywood sheet
1 23" x 2" acrylic or plywood sheet for front
1 22½" x 2" acrylic or plywood sheet for sides
2 5" x 2" acrylic or plywood sheets for backs

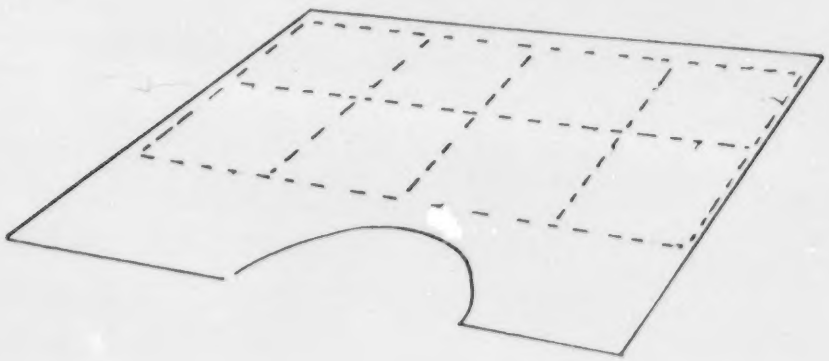
Note: Be consistent in your choice of materials; use either all acrylic or all plywood.

Instructions:

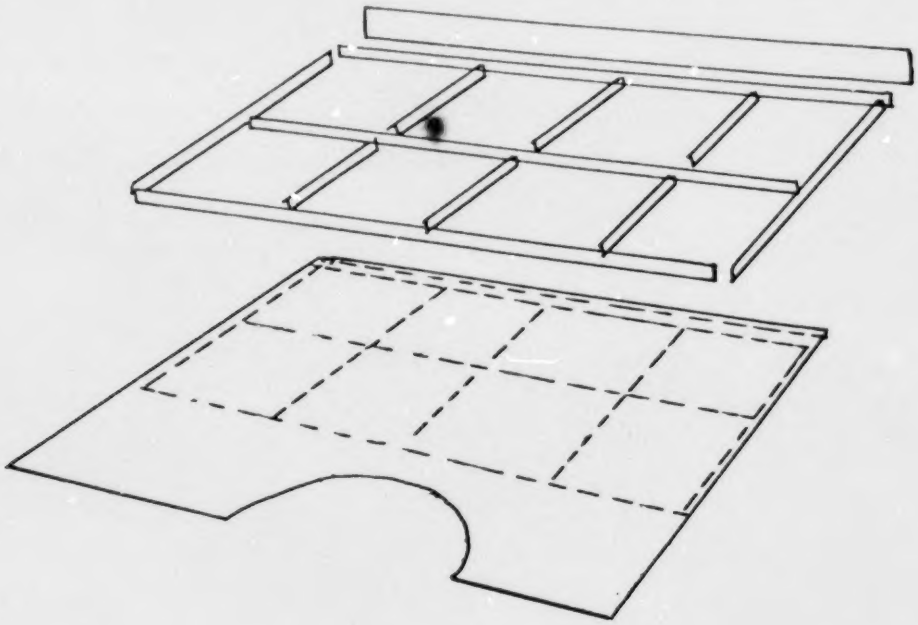
Measure the individual who will be using the tray and cut identical half circles out of each of the large sheets (the 22 7/8" x 22 7/8" x ¼" acrylic sheet and the 23" x 23" x ½" acrylic or plywood sheet) which will accommodate that individual's size.



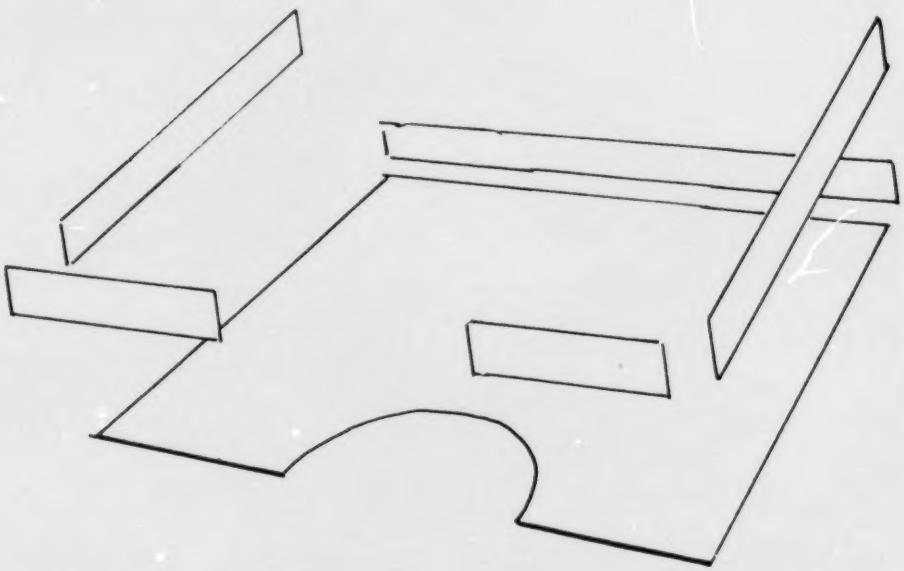
On the large sheet of paper trace the outline of the 22 7/8" x 22 7/8" x ¼" acrylic sheet with its cut-out. Draw a pattern on this tracing as shown here:



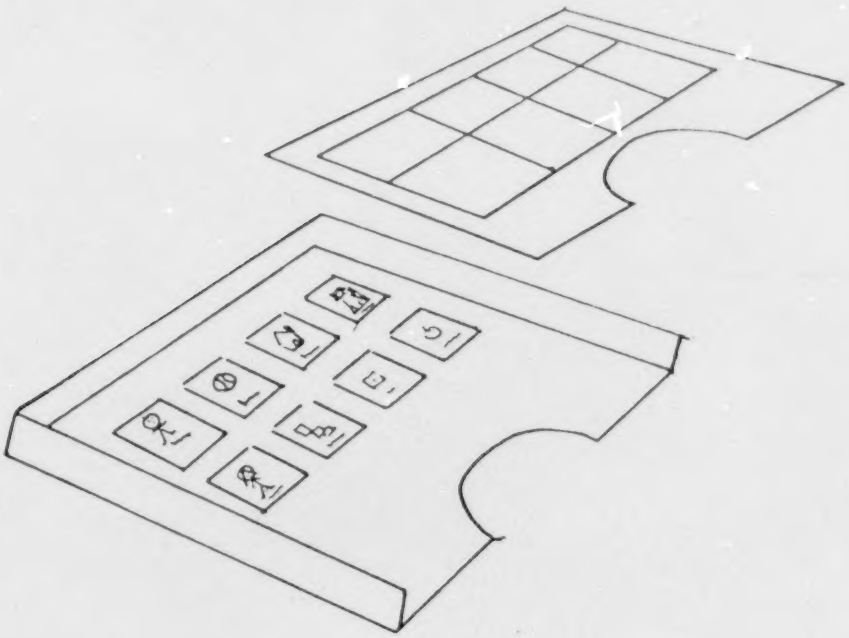
Place the 22 7/8" x 22 7/8" x ¼" sheet on the drawing so that the drawing can be easily seen. Cement the 3/8" and ¾" strips to the appropriate places on the acrylic sheet, as shown here:



Cement the sides, back, and front pieces onto the 23" x 23" x ½" acrylic or plywood sheet. The divided board above will fit into the piece below with the sides. Do not cement.

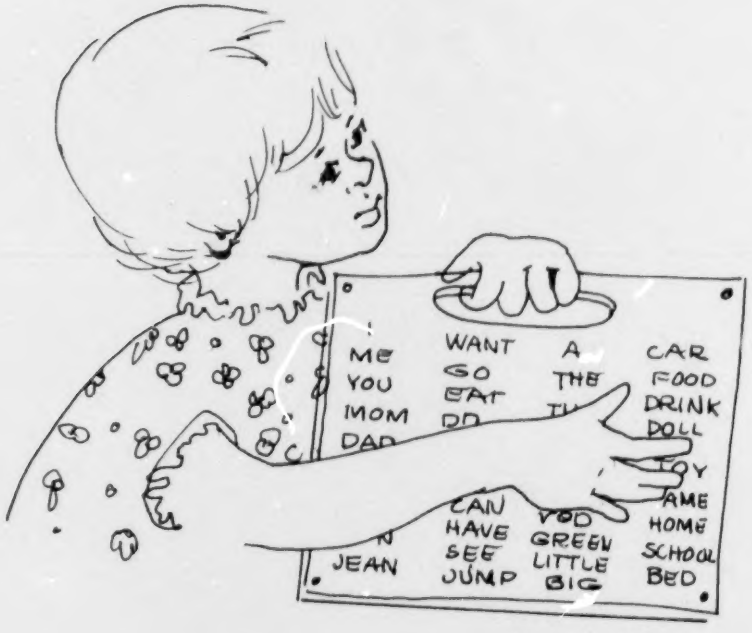


This can be removed to add pictures or whatever is useful.



See adaptations for this tray on pages 58-63.

ACRYLIC TOTE BOARD



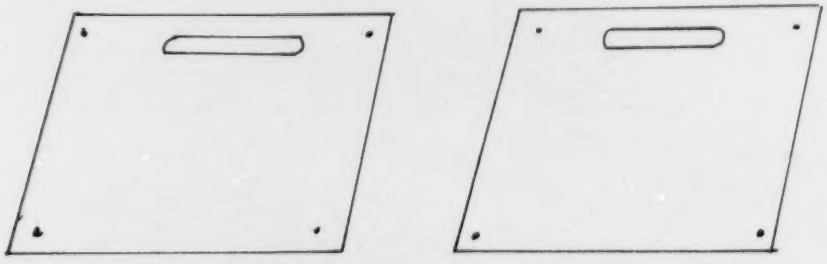
This communication tote was designed to be carried "brief case style" by a child with good pointing responses. Words, symbols, or pictures can be mounted under both sides of the board. The "listener" reads the message as the child points to each response.

Materials

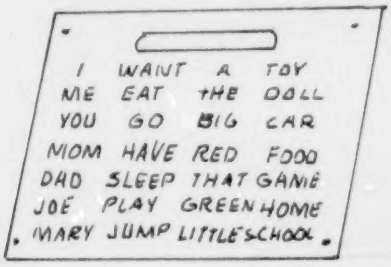
2 8½" x 11" acrylic sheets (width may range from 1/8" to ¼")
4 screws and 4 nuts (size depending on width of sheets)
paper

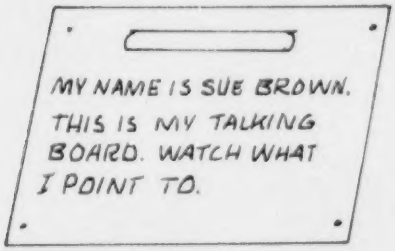
Instructions

Cut identical handle holes in the top of each sheet. The size will depend on the size of the user's hand. Drill identical ¼" holes in the corner of each sheet.

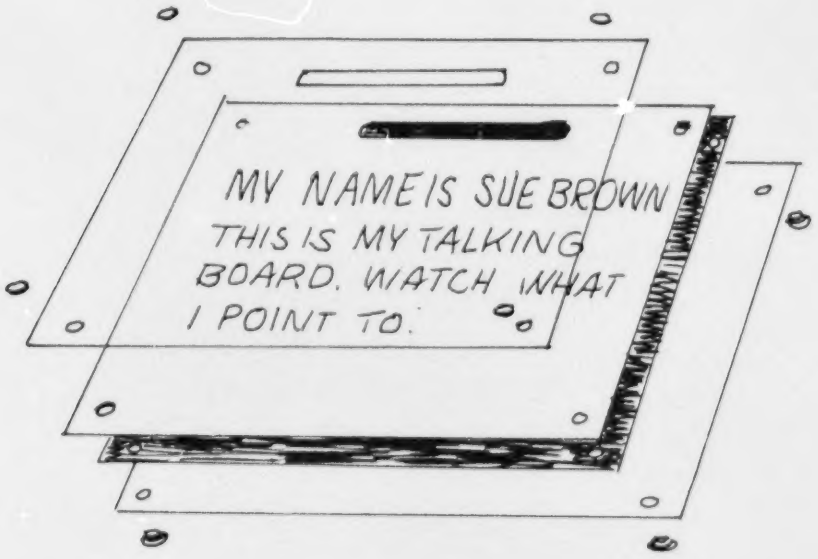


Trace the holes in the acrylic sheets onto two sheets of paper and cut corresponding holes out of the paper. On one sheet of paper write instructions to the listeners and on the other the words or symbols needed for communication.



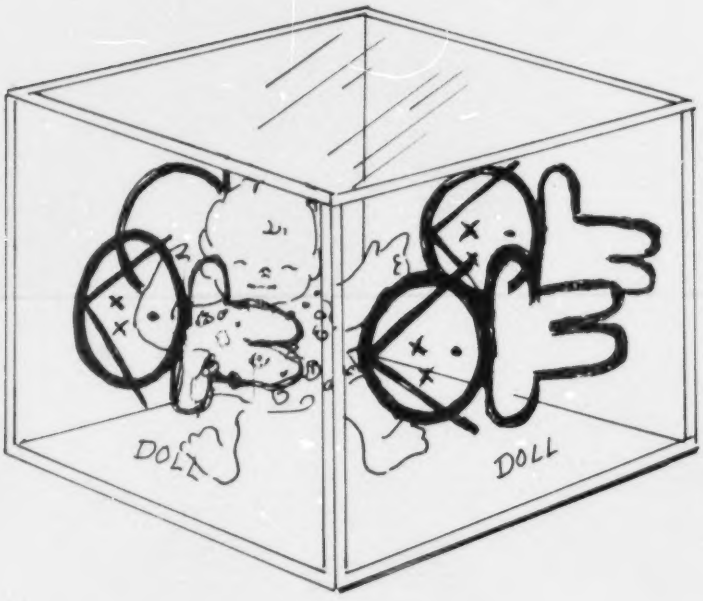


Sandwich the two sheets of paper between the acrylic sheets and secure with the screws and nuts.



See adaptations for this board on pages 58-61.

ACRYLIC SYMBOL BLOCK



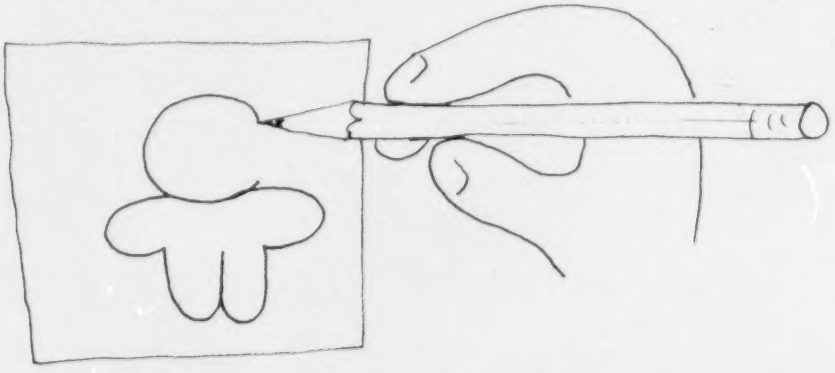
This block is designed to expose a nonspeaking child to symbols and their meaning. A toy is placed inside the block and the symbol for that toy is printed on the outside. In this way the block is similar to alphabet cards or blocks which have pictures of words which begin with a particular letter.

Materials

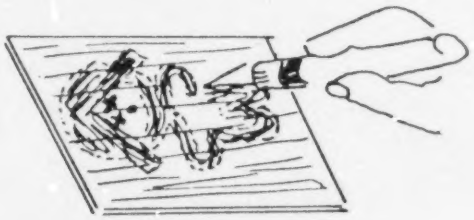
2 4½" x 4½" clear acrylic sheets
2 4½" x 4" clear acrylic sheets
2 4½" x 4½" colored acrylic sheets (any color)
1 toy or object
black spray paint
solvent for cementing acrylic
screw (optional)

Instructions

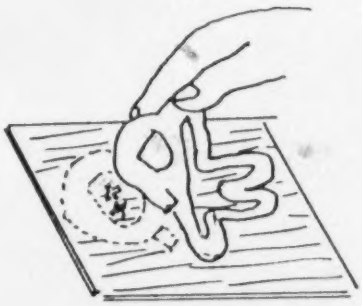
Acrylic usually comes covered with protective tissue paper which you should *not* remove until after you have cut the pieces. Before peeling protective paper off the first acrylic sheet, draw the symbol which represents the selected toy. Be sure to draw the mirror image of the symbol because it will be painted on the inside of the sheet.



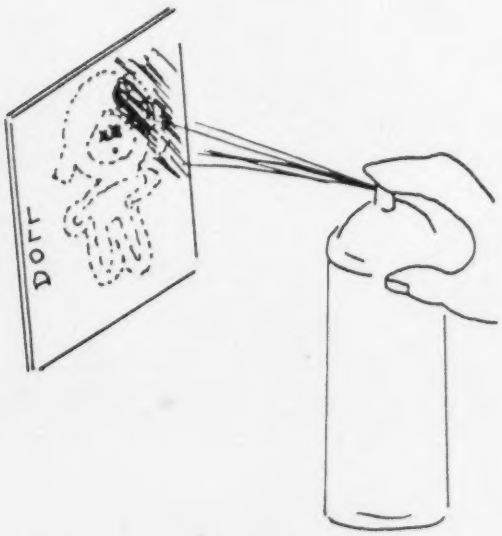
Cut paper with a sharp knife around the outline of the symbol.



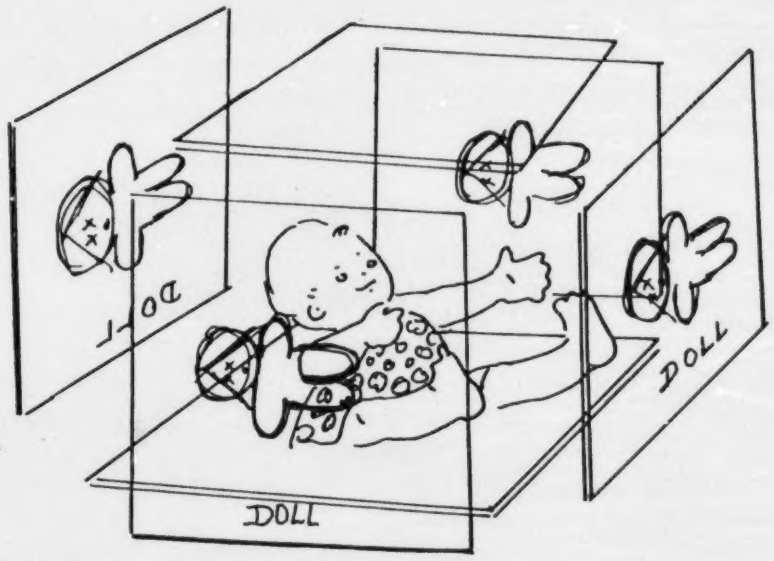
Remove the paper inside the symbol.



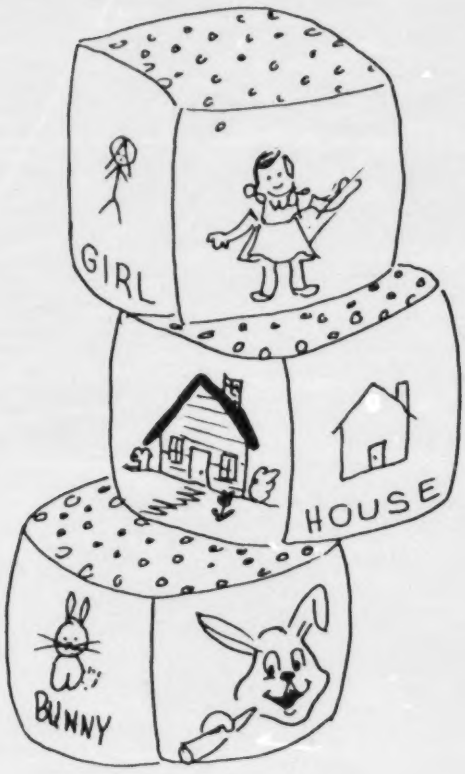
Spray paint the acrylic sheet and let it dry. Because of the paper covering, only that part cut for the symbol should be exposed to the paint.



Remove the remaining paper. You should now have a clear acrylic sheet with the symbol painted in the middle. Follow this same procedure for the other three sheets. Then, cement the bottom of the two 4" x 4" clear acrylic sheets to the top of one of the colored sheets. Be sure the symbol is on the inside. Attach the two remaining clear sheets to the sides and bottom to form a box which is open at the top. Place the toy or object inside the box. (You may want to affix small toys in some way, perhaps with a screw through the bottom of the box.) Cement the remaining colored acrylic sheet on top.



CLOTH SYMBOL BLOCKS



Some children might prefer cloth blocks to acrylic. Or, if a child falls easily soft blocks have a safety advantage.

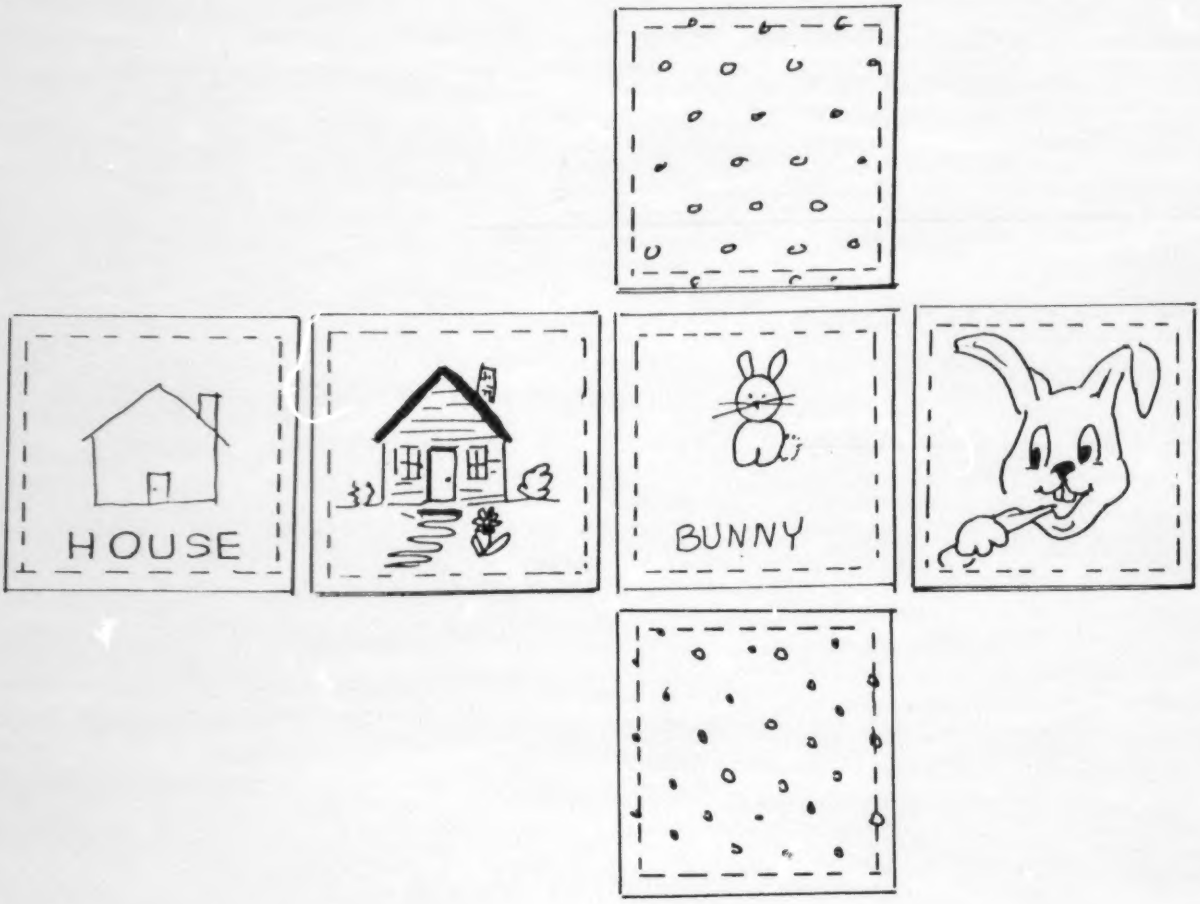
Materials

4 solid pieces of fabric, each 2½" x 2½"
2 contrasting pieces of fabric, each 2½" x 2½"
I block of foam, 2" x 2" x 2"
2 flat magnets (Optional: the magnets are to help hold the blocks in a stack for children with motor problems and may be omitted if this is not necessary)
contact cement
varied colors of embroidery thread, or sewing thread if you machine embroider
line drawings and symbol patterns

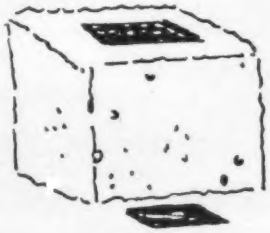
Instructions

Trace a picture on one solid fabric square and a symbol on the other. You may repeat the same picture on the other two solid squares.

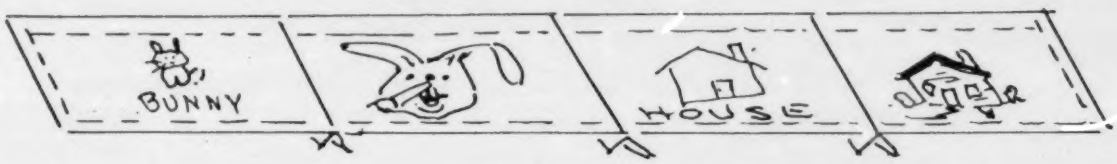
Or, you may select another set.



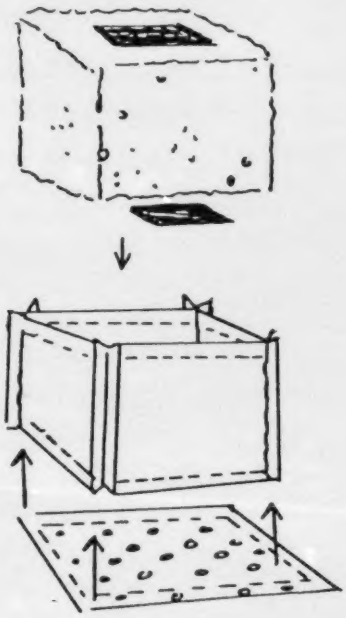
Embroider around the pictures with the color of your choice. Embroider the symbols in black. Print the word under each symbol and embroider it in black also. Cut the block of foam rubber to size with a serrated knife or electric knife. Glue one magnet to the top and the other to the bottom.



Let dry. Sew the embroidered fabric squares together, using a ¼" seam, so that the symbol is next to and alternates with the appropriate picture.



These should now form the sides of the block. Sew a contrasting square to the bottom.



Insert the block and sew the other contrasting square to the top.

SYMBOL STUFFED TOYS

Stuffed toys marked with symbols help a child learn names of objects and body parts.

Materials
1 stuffed toy (doll, teddy bear, etc.)
embroidery thread

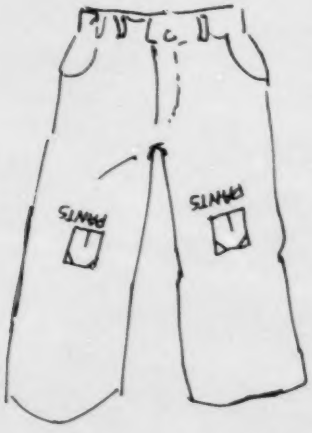
Instructions
Pencil symbols for the appropriate body parts on the toy. Embroider or paint the symbol. You may also wish to embroider the printed word under the symbol, although this requires more sewing ability.

SYMBOL CLOTHING

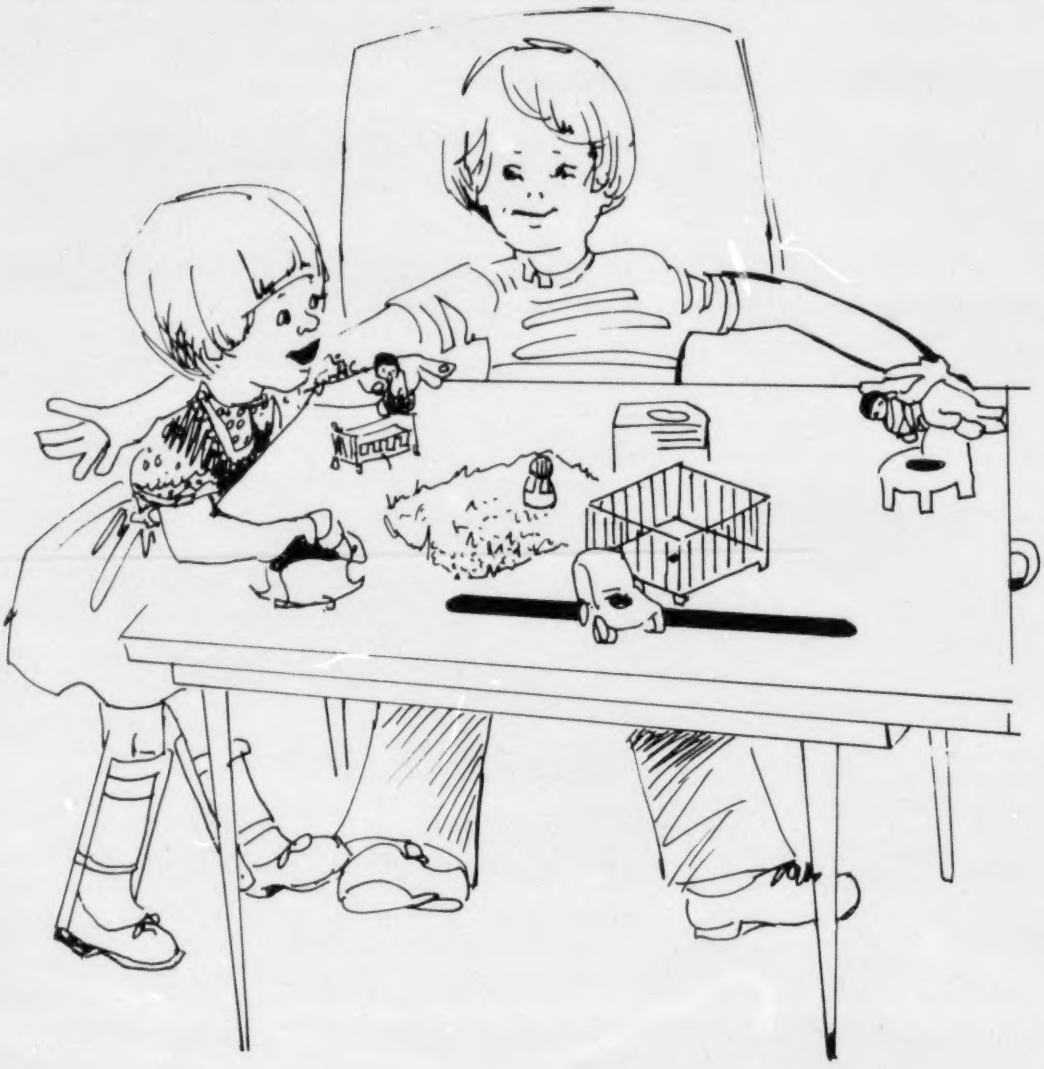
Symbols affixed to pieces of clothing can give a child an everyday reminder of what the symbols mean.

Materials
Selected pieces of the child's clothing
Fabric paint, crayons, or embroidery thread

Instructions
Trace or transfer the symbol for the appropriate article of clothing on that particular article. Paint, embroider, or color (see instructions on the package) the symbol on the fabric. For variety you might transfer any picture and its symbol on the article of clothing, or the name of a body part and its symbol on a piece of clothing which covers that part of the body. Be sure to affix the symbols in such a way that they are easy to read by the child when the clothes are worn.



PLAYBOARD



This Playboard is intended for nonspeaking children who have motor problems affecting their ability to play. Through play, children use language concepts and practice communicative interactions. Nonspeaking children need adaptive devices to make such play experiences possible. The Playboard should be used in conjunction with communication devices.

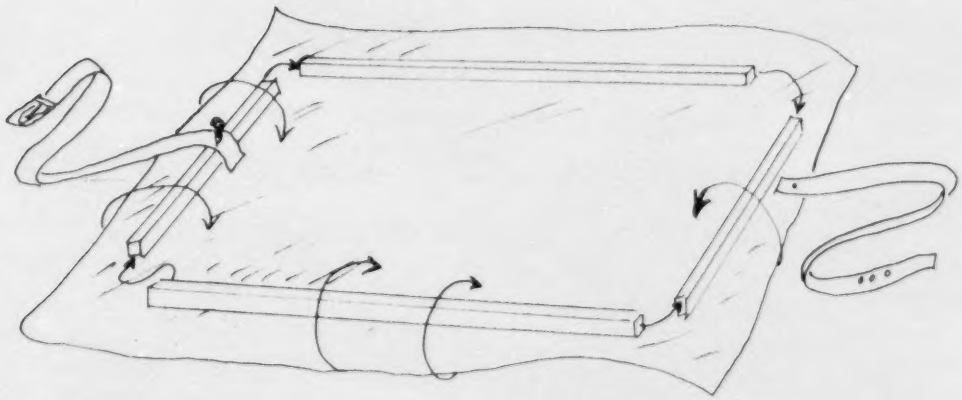
Materials

miscellaneous small toys (such as furniture or vehicles)
1 11" x 18" piece of masonite
2 1" x 18" pine or maple strips
2 1" x 9" pine or maple strips
1 14" x 21" piece of canvas, vinyl, or other heavy fabric
1 belt or strap, long enough to wrap around the table or tray used
staples or small tacks
miscellaneous screws, bolts, nuts, and washers
heavy duty string or fishing line
glue (type depends on material selected; check bottle instructions)
paint or plastic self-adhesive shelf paper

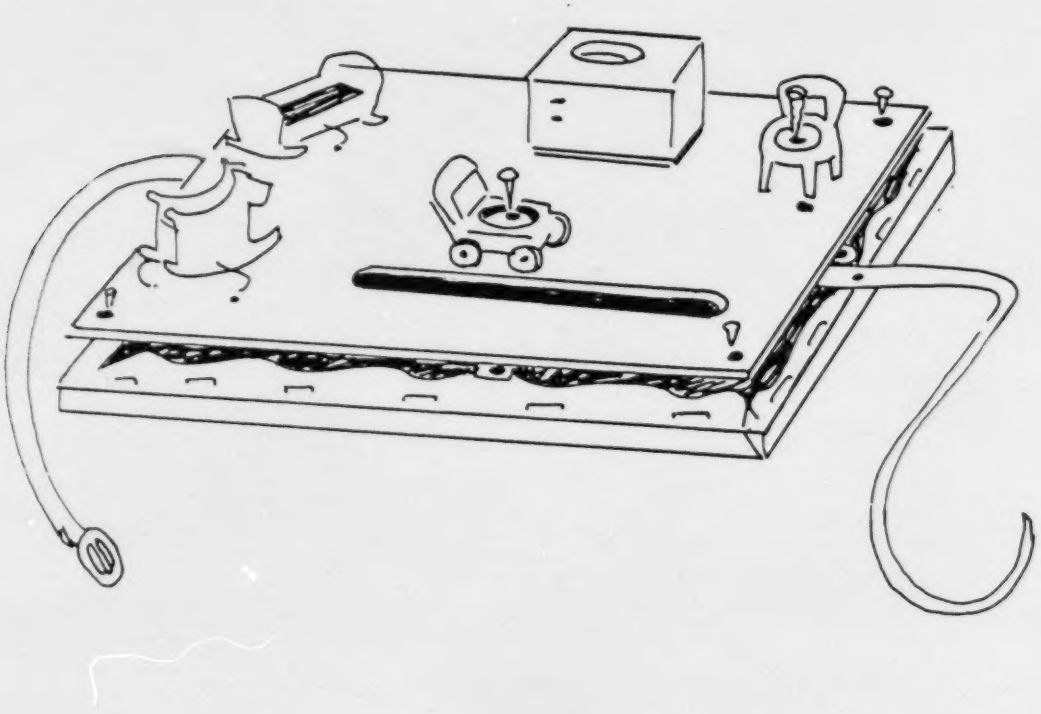
Instructions

Cut a ¼" wide, 8" long slit in the masonite piece. Drill holes at other points in the masonite where you wish to attach toys.

Join the four pine or maple strips with glue or screws. Wrap the heavy fabric around this frame and attach with staples or tacks. Attach the strap or belt to the ends with a screw.



Paint or cover the masonite piece with adhesive plastic. If you use plastic, be sure to leave the slit open in the board. Attach toys by drilling holes entirely through the skin of thin skinned toys and attaching to the board with a nut, bolt, and washer. For solid toys attach through the board from the bottom with a screw. For rocking toys, lace strings or fishing line through holes in the toy and the masonite, and then tie on the underside. Attach a toy with wheels to the slit with a bolt, nut, and large washer. This will allow the toy to move without coming off the board. Be sure you attach the wheel and rocking toys loosely so they can move. Join the board with the toys to the wood frame, using screws in each corner.



See adaptations for this board on pages 58-61.

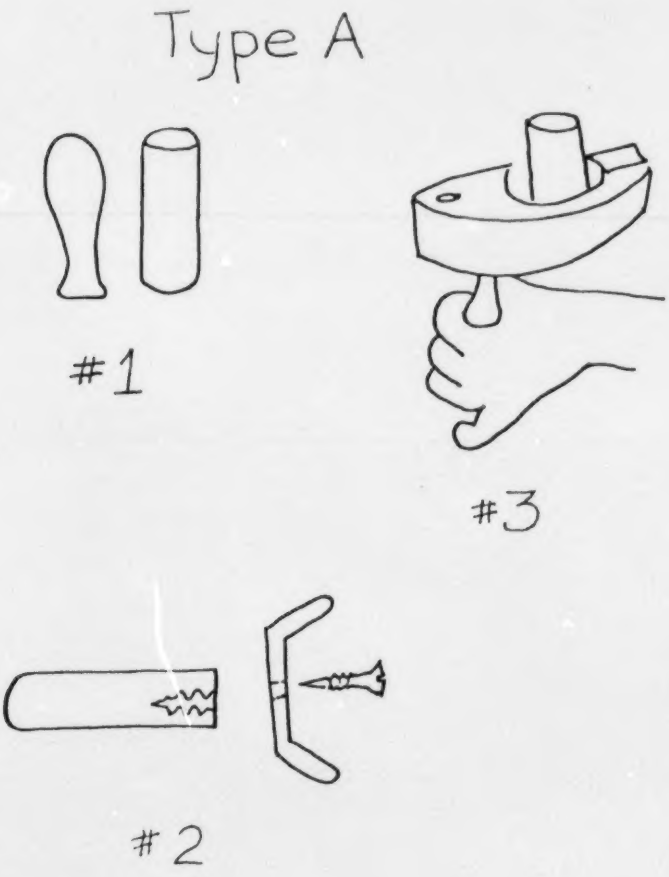
HANDLES FOR SMALL TOYS

Children who cannot grasp small toys, or have difficulty holding onto them, may find handles useful.

Materials
assorted small metal, plastic, and wood toys
wood handles or dowels
cloth ribbon or strapping
glue (type depends on material used; check bottle instructions)
eye screws (a size compatible with the toy)
small nuts, bolts, and screws (a size compatible with the toy)

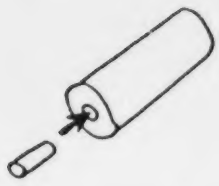
Instructions

If you cannot purchase or make small wooden handles on a lathe, dowels will do. Select a dowel that will fit comfortably in the child's hand. Type "A" handles will be used on toys with a thin outer layer through which a hole can be drilled. Drill a hole through the toy and attach the handle with a screw.



Type "B" handles should be used on solid or thick skinned toys. Drill a ¼" hole in one end of a dowel and glue another dowel which is ¼" in diameter and ½" long into the hole. Then, drill a hole in the toy the size of this smaller dowel, the end piece. Insert the end piece into the toy and bond with glue.

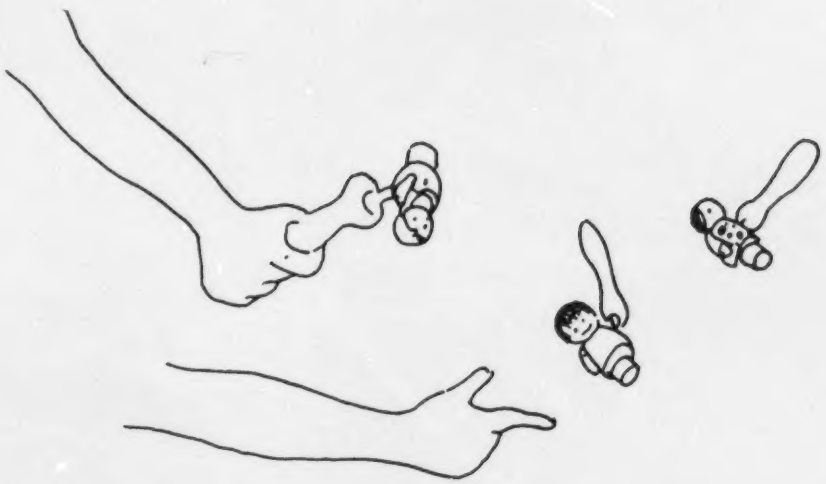
Type B

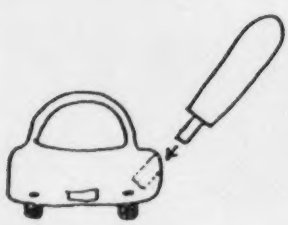


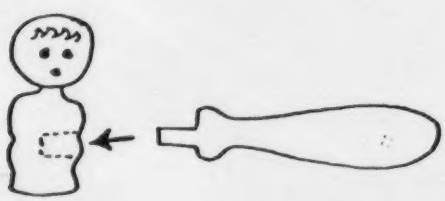
#1

#2

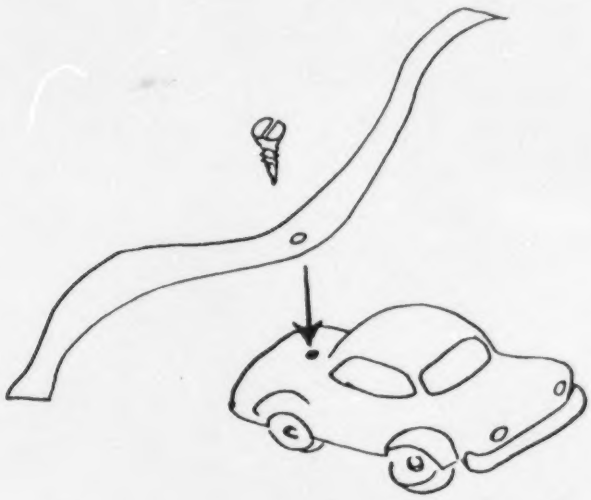
or premade







Finish all handles with sandpaper, oil, paint, or varnish so they will not splinter. To attach fabric straps (buckles, ties, or velcro fasteners can be used for straps), punch or drill a hole in the toy and attach the strap with a screw (for solid toys) or nut and bolt (for thin skinned toys). Or, fasten an eye screw to the toy and attach the strap by sewing it to the eye screw.



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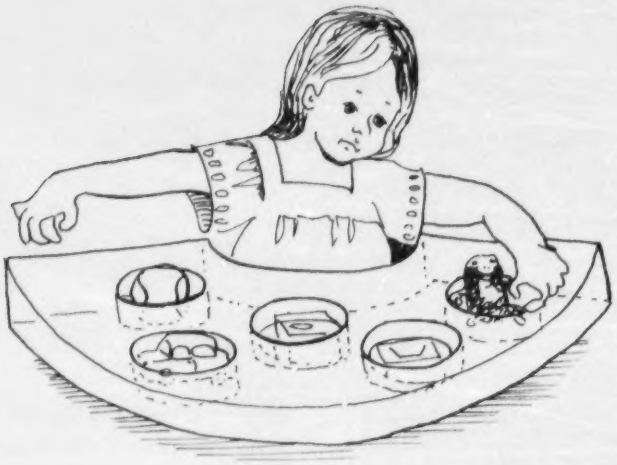
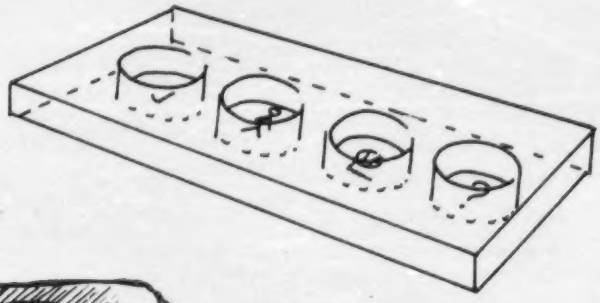
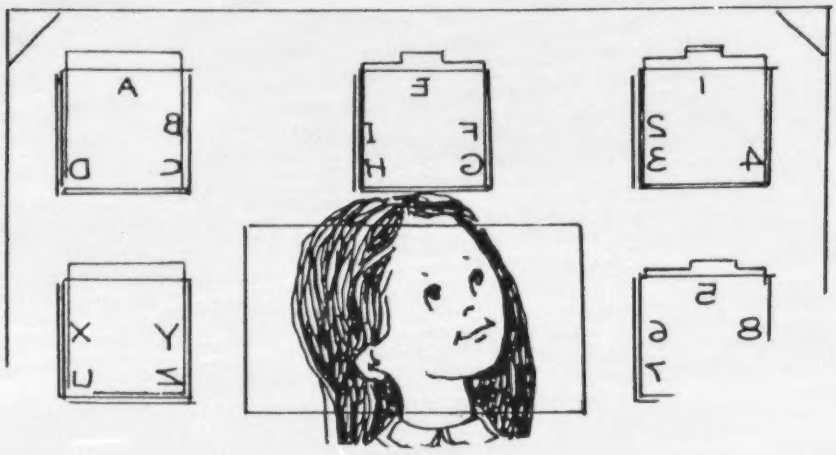
ADAPTATIONS — HOW TO INDIVIDUALIZE





These variations make adaptations to the previous designs possible so that the items can be customized for each individual.

LETTER, SYMBOL, OR PICTURE INSERTS FOR LOOKING BOARDS (TRANSPARENT)



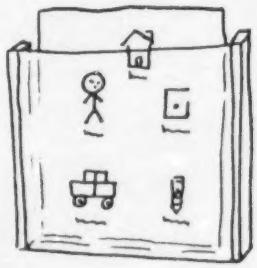
Whether you decide to use transparent or non-transparent inserts for Looking Boards depends on the needs of the child for whom the board is designed. See page 52 for instructions on making *non*-transparent inserts.

Materials

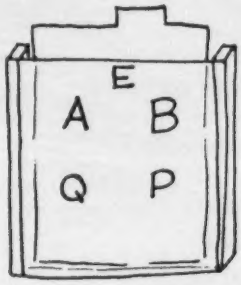
thin plastic sheets (can be soft plastic — such as food storage bags, plastic yard goods used as storm windows, or other protective coverings — or stiff plastic from protective notebook pages, clear acetate, or transparency sheets)
paper for tracing patterns
soft pencil
black permanent marking pen
red, gold, green, and blue permanent marking pens, or adhesive transparent plastic in red, gold, green, and blue (for 8 pocket board only)

Instructions

Place the paper for tracing over one pocket of the Looking Board and lightly trace the inside border of the sides and bottom of the pocket. Make the top line ¼" higher than the pocket's top border. This will provide space for a tab to hold when sliding the sheets in and out of the pockets. You may leave the tab the entire length of the top board.



Or, you may cut back the sides and leave a small tab.



Place the pattern over the thin plastic sheets and cut enough tabbed squares to fill each pocket. Using the black marking pen, draw letters, pictures, or symbols on the plastic or place the plastic over a symbol or picture of the appropriate size and trace. Be sure to use *permanent* marking pens. Washable markers will not write on plastic. By placing the sheets with symbols, letters or pictures into the color coded pockets on the Looking Board, you are now ready to begin communicating.

If you need to color code the plastic sheets themselves, use the adhesive transparent plastic or colored marking pens. On a piece of paper make a pattern indicating where each symbol is to go. If you use adhesive plastic sheets, cut squares which will be large enough to cover the symbols. Remove the backing on the sheets and place over the appropriate symbol or letter. if you are using marking pens, turn the plastic with the written material over and color the back with a marking pen. Don't color the front of the plastic since the writing will smear. If you have access to a duplicating machine that can copy on transparencies, draw your symbols on white paper or copy directly from the source onto transparencies. Then, cut to the appropriate size. Color code in the same way as those made with marking pens.

LETTER, SYMBOL, OR PICTURE INSERTS FOR LOOKING BOARDS (NON-TRANSPARENT)

Materials
paper or thin cardboard
paper for tracing patterns
soft pencil
black permanent marking pens
red, gold, green, and blue permanent marking pens

Instructions
If you do not wish to have the symbols or letters on transparent sheets, substitute any paper or thin cardboard you have available, or copy materials with a duplicating machine. Color code with marking pens. Be sure to also write the symbol on the back side so that the "listener" knows what symbol is being looked at. Check again to see that the word or symbol on the back matches the one on the front. Remember that the back of the sheet will be a mirror image of the front and not a replica.

ATTACHING LOOKING BOARD WITH L BRACES

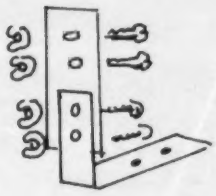
These instructions will enable you to attach a Looking Board to a table or wheelchair tray with L braces.

Materials

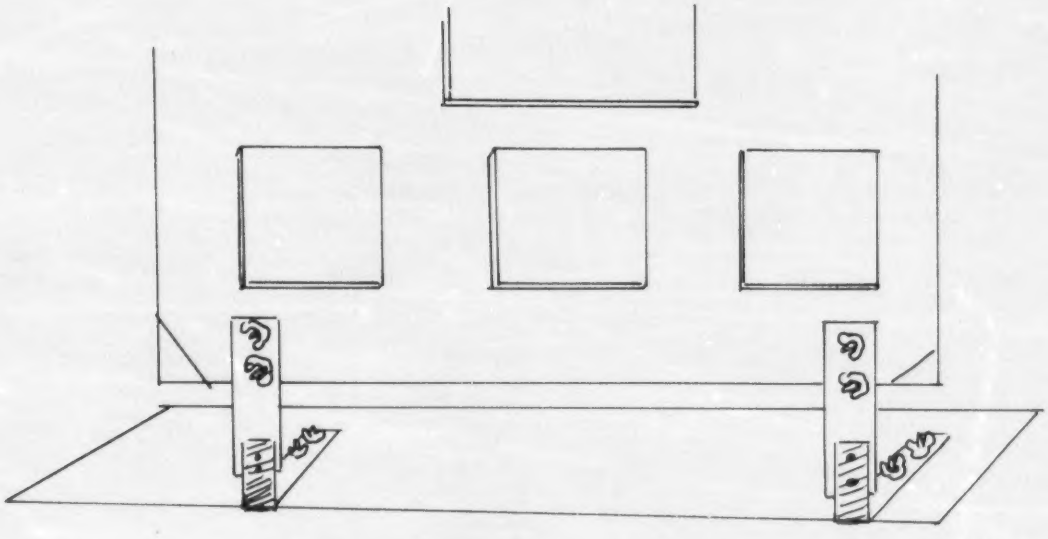
2 L braces, size and strength based on thickness and size of Looking Board
2 metal or wood strips (length will depend on height of person using the board)
12 bolts, size to fit strips
12 washers, size to fit strips
12 wing nuts, size to fit strips

Instructions

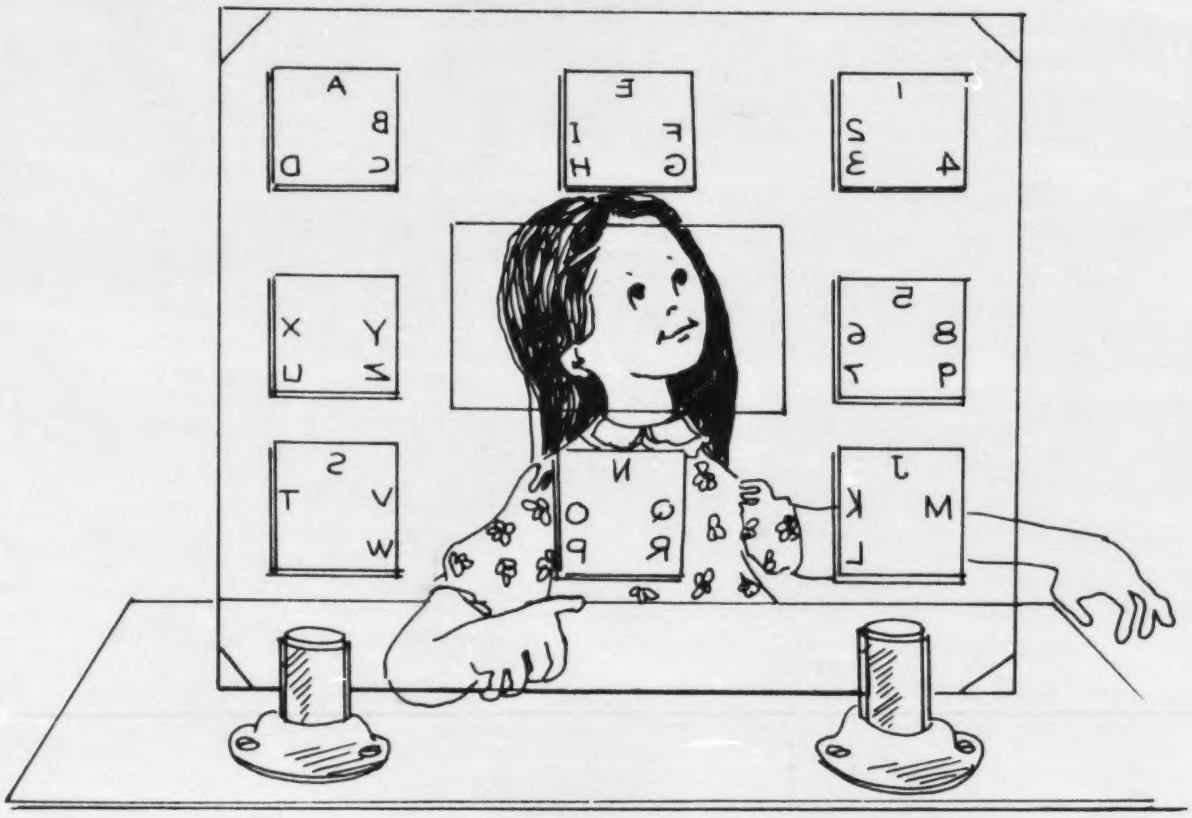
Drill two holes at the bottom of the wood or metal strips which will correspond to the holes in the L braces. Drill two holes at the top of each strip at least 1" apart.



Take the Looking Board and drill two holes, one on top of the other, along the lower left side. One hole should be ½" from the bottom edge, and the other 1½". Drill an identical pair of holes on the lower right side. Attach the strips to the L braces and the top part of each strip to the Looking Board using bolts, washers, and wing nuts. Attach the Looking Board to a table, bed rail, or wheelchair tray with bolts, washers, and wing nuts.



ATTACHING THE LOOKING BOARD WITH PLUMBING PIPES



Plumbing pipes make the Looking Board easy to remove.

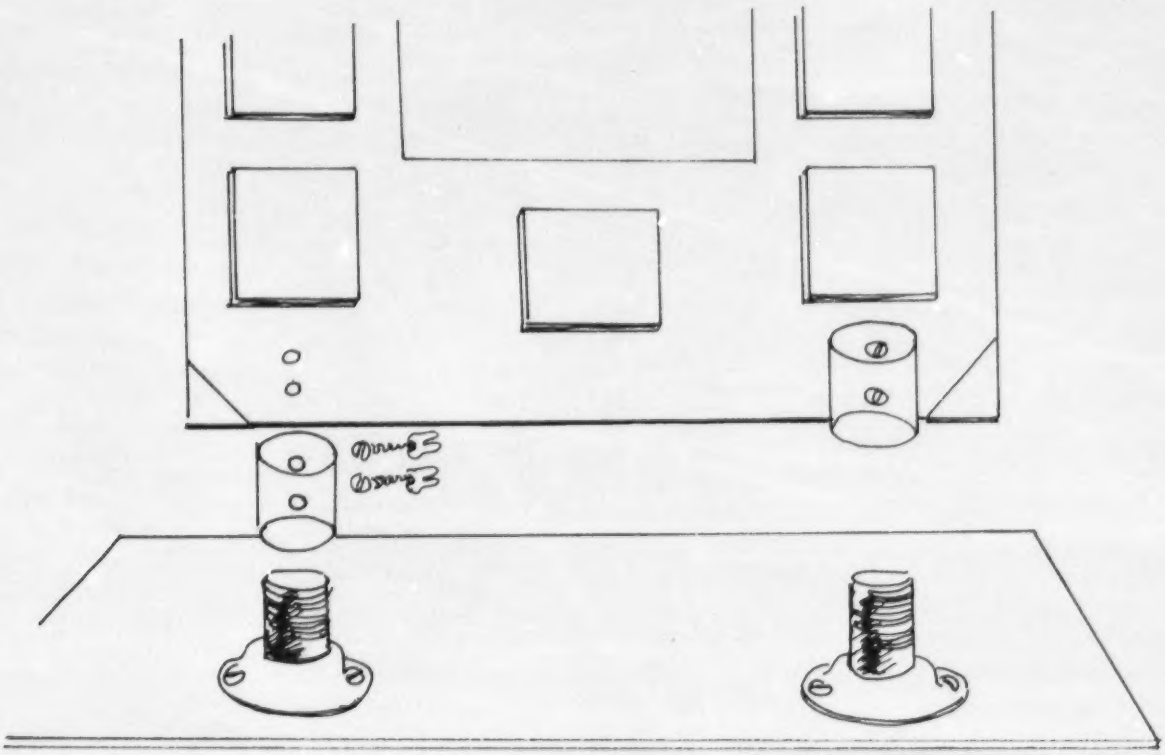
Materials

2 plastic plumbing pipe tubes*
2 metal pipes (length depends on the height of the child)
2 flanges to attach to table
4 bolts, 4 nuts, and 4 washers to attach pipes to Looking Board
8 bolts, 8 nuts, and 8 washers to attach flange to work surface

* *The size of the plastic plumbing pipes may vary. However, be sure the plastic tubes are large enough so that the metal pipe fits easily inside each one, but not so large that it is wobbly. When you go to the supply store fit the metal pipes inside the plastic plumbing tubes to test before purchasing.*

Instructions

Drill two holes through the Looking Board at least 1" apart along the lower left side. One hole should be about ½" from the bottom edge, and the other 1½". Drill an identical pair of holes on the lower right side of the Looking Board. Drill two holes to match in each of the plastic plumbing pipe tubes. Attach the tubes to the Looking Board with the four bolts, nuts, and washers.



Screw the metal pipes into the flanges and insert them into the plastic plumbing pipe tubes on the Looking Board. Position the board on the child's wheelchair tray, table, or bed support and attach the flanges to the work surface in an appropriate place. The Looking Board can now be removed by simply lifting it off when not in use.

MEASURING FOR CUSTOM FIT OF HAND DEVICES

When building hand devices such as the BOARD WITH WELLS (page 20) or the DIVIDED ACRYLIC TRAY (page 22) it is good to determine the limits of the area in which a child can use his or her hands.

Materials
large sheets of plain paper
tape
markers or pencils
a chair seat which puts the child in the best position
tray, table, or stand best adapted to the child's needs
miscellaneous toys, pictures, or objects of interest to the child

Instructions

First of all, you should consult with occupational and physical therapists about the most appropriate chair seat, tray, table, or stand.

Tape large sheets of paper to the child's tray or table so that the paper entirely covers its surface. If the tray or table covers too small an area, rig up extenders with boards, tape, C-clamps, or anything else that works and see if a new table or tray can be made or ordered for the child. If you use extenders, make sure the entire surface of the table and extenders is covered by the paper. With felt markers or a pencil, draw arrows which indicate where the child is seated in relation to the paper. Write on the paper what these arrows indicate.

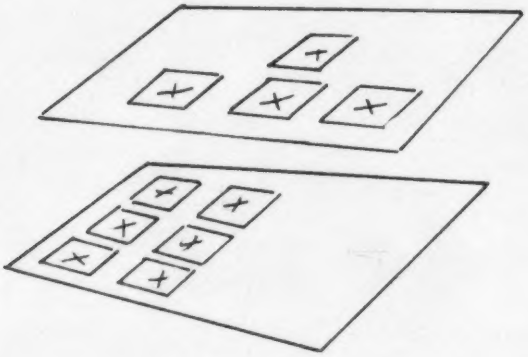
Get out the toys or pictures and begin to play with your child. Mark with an "X" the areas where he or she is playing. Be sure to move the play to the outermost limits of the surface. Terminate the play before the child tires and date the paper. If you don't feel the child reached his or her limits or did not perform in a typical fashion, put the paper aside and use the same paper another day, repeating the activity with different colors or markers or pencils.

You should now have a pattern of the area the child can use. Work with an occupational therapist, or ask that he or she do this activity with the child for you. When completed you may proceed to TESTING FOR CUSTOM FIT on page 60.

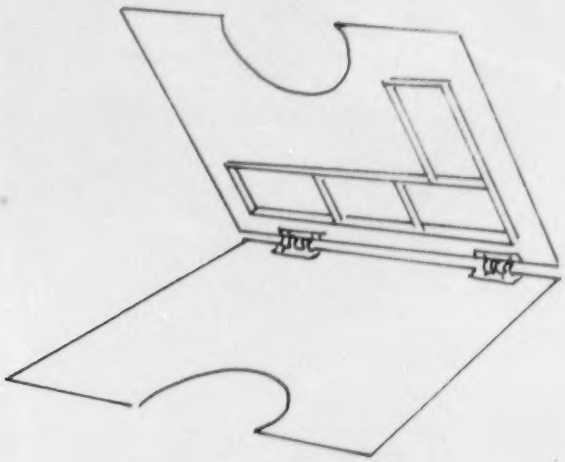
TESTING FOR CUSTOM FIT OF HAND DEVICES

Materials
pattern from MEASURING FOR CUSTOM FIT (see page 58)
large sheets of paper
markers or pencils
toys and pictures of various sizes
tape

Instructions
Using information gained from MEASURING FOR CUSTOM FIT on page 58, tape toys or pictures to those areas most useful to the child. Have the child find a toy or picture which you request, point to it, or indicate it in some manner. Start with mid-sized toys or pictures with moderate space between each. If the child reaches these with ease use closer spacing and smaller items until his or her limit is reached. Put an "X" in the area every time a child reaches it. This will begin to give you an idea of the areas he or she can reach most easily. Remember to vary where the toys or pictures go. You should now have a map or pattern for your display size and arrangement.

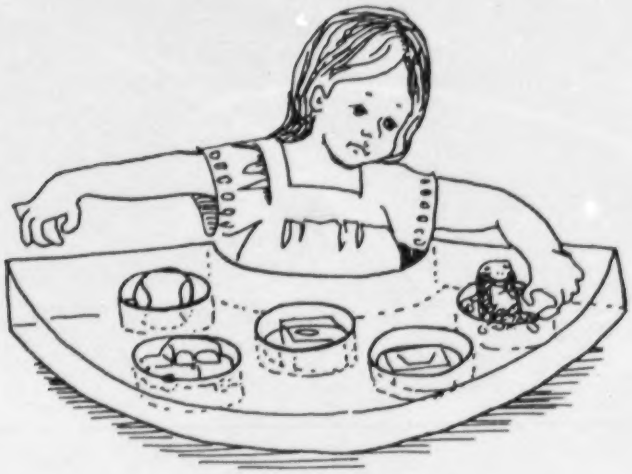


Using that pattern you can now vary your patterns for the Divided Acrylic Tray or the Board With Wells.



If the height of the dividers is a problem see SPECIAL ADAPTATIONS FOR DIVIDED BOARDS OR TRAYS on page 62.

SPECIAL ADAPTATIONS FOR DIVIDED BOARDS OR TRAYS



Materials
small wood or plastic strips of varying widths, or small boxes
tape
hinges (with removable pins)
existing wheelchair trays

Instructions

If your child's hand slides across the surface when TESTING FOR CUSTOM FIT (page 60), tape varying widths of wood or plastic around each toy or picture to form a box, or tape a box of appropriate dimensions to that area. The bottoms of various sized milk cartons are appropriate. Measure the height of the box your child can most easily get his or her hand into and make the tubing (for the BOARD WITH WELLS, page 20) that deep, or the dividing plastic strips (for the DIVIDED ACRYLIC TRAY, page 22) that high. If your child has an existing tray or table, trace around it and change the dimensions in the Board With Wells or Divided Acrylic Tray to match those of your child's tray or table.

The trays or boards slide off surfaces without sides and backs, but obviously these features are not found on all surfaces you will use. An easy solution is to attach the tray or board with hinges which have removable pins. If you remove the pins the acrylic portion can be taken off and the tray or table used as before with a minimum of alteration. It can also be easily lifted so that symbols or pictures can be quickly changed.

By hinging the board or tray on the back or inside surface it can be tilted and used like an easel for children who need that angle. A wedge of the proper incline can be inserted at the hinge to hold the board at the proper angle. Or a prop of the appropriate height can be fastened at the front and folded under when not needed.